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THE NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

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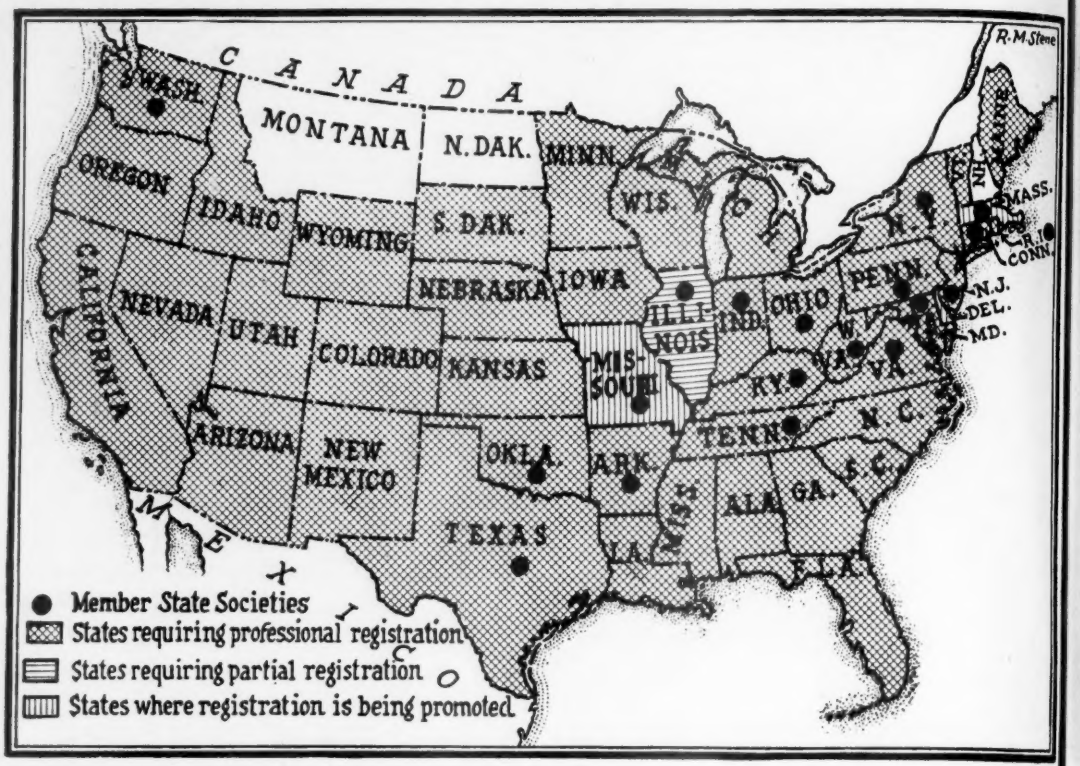

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The Cover

The most important current piece of news was the story of the meeting between the President of the United States of America, Franklin D. Roosevelt, and the Prime Minister of the Commonwealth of Great Britain, Winston Churchill, on shipboard "Somewhere in the Atlantic" in the middle of August 1941. Thus far, the only public pronouncement as the result of the meeting is the agreement on the "Eight Points for World Peace." It is probably a safe conclusion to draw however, that when two such Statesmen meet and confer continually for three whole days, broad policies of economic, political, military and naval strategy are thoroughly covered and the remotest eventuality planned for.

EDITORIAL • • •

Aftermath

Tucked away in the minutes of the National Society of Professional Engineers most recent Directors Meeting is a quiet Resolution providing for a Committee to plan for a national recovery program after the war has ceased, and the great defense activity has sloughed off.

Who should be better qualified to plan for the future of the Nation than Engineers with their experience in economics, construction, transportation, communication and their gradually increasing ability in political economy. The Society will look forward to the result of the labors and studies of this Committee.

Certain fundamentals in the structure of the American economy must be maintained and strengthened. There must be private enterprise. There must be the incentive for the individual to accumulate savings and the right to invest those savings at a fair profit in such private enterprise. The Government cannot increasingly encroach into the fields of private enterprise and yet continue our representative form of Government.

We cannot constantly live beyond our means by borrowing each Federal fiscal period more than we take in through taxation or other sources. Sooner or later the breaking point is reached. These matters being axioms and assuming the majority of us wish to maintain our American institutions, plans for the future must trend away from the existing current.

We will go through trying times; inflation,—boom,—deflation,—depression, and the program will again include the issue of Work Relief versus Direct Relief and all the immediate past attendent problems.

Let us encourage private enterprise and "pay as you go."

Certainly it is evident that great public works of a self-liquidating nature such as, Port Authority Tunnels, Toll Turnpikes, which are self-supporting, are more advantageous to the national economy than are public projects supported wholly by tax monies.

We urge upon the Committee a report not too long, not too complicated, and filled with fundamentals.

We know that within our Society is a talent to accomplish this work and we further know that the general membership will give such Committee its full support.

Any recommendation for alleviation of the travail through which we are bound to go will be well worth the effort of the Committee Members.

ROBERT HALL CRAIG

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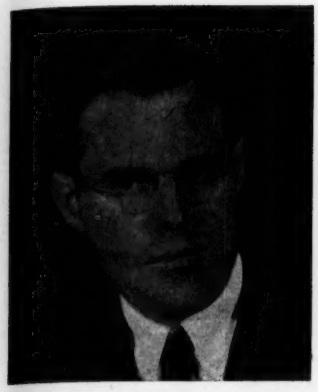
New Jersey Society of Professional Engineers, Inc.

1941



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Code for Securing Justice for All in Management-Labor Relations

By **SAMUEL S. WYER**

Consulting Engineer, Columbus, Ohio, Member O.S.P.E.

I. Background and General Guiding Principles

STUDIES of Management-Labor problems, whether made within the plant or by the public representatives outside, should be guided by the following:

1. *Abuses on Both Sides*—We must start with a clean slate in examining these relations. Both Management and Labor have been guilty of many abuses in their mutual relations. However, past abuses by one side do not condone present abuses by the other side, and vice versa.

2. *Public Interest is Paramount*—In all Management-Labor controversies, the public is an interested party of the third part. Where Management and Labor conflict, the issues should be decided in the public interest.

3. *Four Parties in Interest*—In every business activity there are four interested parties: Capital as the provider and owner of the facilities used in production; labor as the worker; Management as the director of activities of Capital and Labor; and the Public. Management should always be regarded as a trustee for Capital, Labor and the Public.

4. *Limitations of Property Rights*—While property as such cannot have rights, human beings have the right of ownership and the right to have such ownership protected. Therefore, there is no issue between property rights and human rights, but between two classes of human rights.

However, the right of ownership does not create the right to exploit human beings for monetary gain. No property rights are absolute. As our United States Supreme Court has aptly said: "Every holder of property, however absolute may be his title, holds it under the implied liability that its use may be so regulated that it shall not be injurious to the equal enjoyment of others having an equal right to the enjoyment of their property, nor injurious to the rights of the community." Thus, economic relations should always be expressed in terms of human welfare, because economic security for the masses is more important than economic power for the favored few.

5. *Labor Not a Commodity*—Every worker has the right to be regarded as a definite individual personality. Labor must never be regarded as a commodity to be bought and sold to the highest bidder.

6. *Abolish Management-Labor Anarchy*—We should create the necessary legal facilities and then insist upon both Management and Labor following due process of law in their relations. Labor lawlessness has been condoned because of the undue power in Management's hands. That balance of power has since been shifted so that Labor frequently takes the upper hand. The public interest requires an end to lawless violence in labor disputes.

There are only two areas in human relationships where we tolerate violence:

A—International relations—that is war.

B—Management-Labor relations—anarchy due to lack of adequate law.

For all other controversies, we secure justice without recourse to violence by judicial procedure. Violence of Management-Labor anarchy will continue until the public creates a workable substitute.

7. *Grievance Airing Facilities*—The most important step in creating industrial peace is to have "grievance airing facilities" available to every worker. These facilities should be set up jointly by Management and Labor in each plant. It is as essential to reduce friction in Management-Labor relations as it is in machinery.

8. *Legal Facilities*—When efforts within a plant fail to solve Management controversies, then outside legal facilities must be available to everyone for prompt and fair hearing. These facilities must be available even to individual workers—without cost—for grievances which are not properly adjusted in the plant.

9. *Capital*—This is not found in nature but is brought into existence by man's efforts and includes everything of value which may be used either for further production, as tools or machinery, or for slow consumption, like building structures. Capital may be looked on as stored labor held for the production of fresh wealth. Capital is the big fact in today's civilization and needs neither sympathy nor apology, for without Capital, Labor could not function. Any person who has saved, set aside, and invested such savings—regardless of amount—is a Capitalist. For instance, life insurance companies must invest in industries. Hence, every policy holder is a Capitalist.

10. *Interdependence Between Capital and Labor*—There is such interdependence between Capital and Labor that neither can function without the use and cooperation of the other. Paying labor the highest wage scale possible is good business. Prosperity is dependent on the masses having the buying power to buy the goods that industry makes. Because of this interdependence, Capital and Labor are business partners who cannot injure one without injuring the other.

11. *"Real Wealth"*—As ordinarily used, the term "wealth" means merely our physical things priced. This is not the whole story. Merely making things is not necessarily creating "real wealth." Only that is "real wealth" where the wealth creating process has provided the buying power that the wealth may actually be used.

12. *Creation of Buying Power*—The fundamental objective that should dominate all questions of income between Capital and Labor groups is the need of creating buying power. Every business activity needs not merely to create goods or render services, but to take on a new line of creating and fairly distributing buying power so that the workers will have the income to buy that which industry's production makes possible.

13. *Division of National Income*—The income of the nation is the sum total of the income of all individuals. This is made up of the income received by all working on wealth creating activities, performing services on wealth, or of individuals performing services for each other. The division of income as between the Capital,

Management and Labor groups should be proportional to the services that each renders. In computing the income on Capital, only the present fair value of the property used and useful in the operation should be used. Inflated values, speculative and idle wealth must be excluded.

14. *Farm and Urban Interdependence*—The farmer is our only basic wealth creator. He is the only one who actually creates new natural resources. When the farmer —by partnership with nature—places a seed in the ground to grow a plant or breeds an animal, he is creating a natural product that was not in existence before. The miner and the fisherman are merely finders of things previously created by nature. All other groups merely modify the things the farmer creates, or are found in nature, or perform services on these to make them available to consumers.

Counting the people in our small country towns dependent directly on the farmer's buying power, at least 45% of our people are directly dependent on the economic welfare of our farmers. There can be no material prosperity for the nation as a whole and industrial groups in particular unless and until the farmers are placed on a prosperous basis. This requires that industrial prices and farm prices must necessarily be in parity. The quickest way to bring prosperity to the farmers is to create buying power for urban workers, who are the farmer's customers. Giving the urban worker a larger share of the nation's income will create the buying power to utilize the farmer's products.

15. *Forced Wages*—Under a competitive system, wages may be driven too low. Under pressure of unfair labor domination they may be driven too high. In either case, the public suffers in the long run.

16. *Living Wage to All*—Public interest demands for Labor at least a basic living wage for all those who work and are able to earn it. The standard of living of the worker is determined not by what he gets by the hour or per day, but by his total annual income and the goods or services it will buy.

17. *"Cost" Biggest Word in American Industry*—This is also the most misunderstood term and must always include:

1—Labor, selling, taxes, insurance, management, and other operating expenses that continue regardless of output;

2—Provision for the replacement of Capital put in as fast as it vanishes;

3—Rental or hire of Capital used in the project, ordinarily called interest. If industry has anything left after providing for the items embraced in cost, this is then a profit.

18. *Profit Necessary*—A fair profit is a legitimate part of a fair sale price, and profit is not something to which an odium should be attached but a normal part of every normal business project. Every successful business enterprise must make more than immediate needs for mere net operation, since excess Capital is needed for growth and stability. Industry as a whole must produce adequate profits with which to advance and increase employment, and with which to play its important part in producing revenue for the support of government. The public interest requires profitable enterprise in general.

19. *Profiteering*—This is a tribute exacted above fair compensation for either Labor or Capital because of a strategic position. It represents neither service to the producer or to the purchaser; it is merely a pirate's unearned toll, is a species of social steal, and a form of extortion that has been endured by the Public because the Public has been unable to turn the scathing light of publicity on the pirate.

20. *Money Wages and Real Wages*—Distinction should be made between money wages and real wages. Social and economic improvement can only be attained through improvement in real wages, which takes into consideration the cost of those things essential for living, enjoyment and betterment.

21. *Provide Reserves*—Just as provision has been made for unemployment reserves for the employee, so must industry in prosperous periods set up reserves to carry it through depression, otherwise, industry would break down—which would result in greater unemployment.

22. *Women Workers*—Where women perform the same services as men, their wage rates should be the same as the wage rates of men.

23. *Seniority*—The ranking of employees in terms of length of service should be followed as far as practicable, but must be tempered in accordance with each individual's capacity.

24. *Reward Superior Performance*—The superiority performance of the individual worker should be rewarded proportionally. Where any business earns greater than average profits, it should share those profits with its workers by paying higher than average wages.

25. *Discourage Overtime*—Overtime should be discouraged but not prohibited. In case of war, overtime rates to labor, like excess profits for capital, should be eliminated.

26. *Spreading Work*—Where full production and employment cannot be maintained, hours of labor per week should be reduced first. Rates should not be reduced nor workers laid off except as a last resort.

27. *Collective Bargaining*—Any group of employees should have the right to organize themselves into a union for wage negotiations and collective bargaining. Financial support for the union must be on the basis of the free will of the members without outside coercion. Men belonging to such a union have the right to work without being harassed by their employers or their fellow workers. The members of the union have the right to decide what its outside affiliations shall be. The right of a group to refuse to work does not abrogate the right of others to work.

28. *Individual's Rights Must Be Preserved*—Any worker should have the right to join, or not to join, any union, as he sees fit. Membership in a particular union, as a qualification for employment, is unfair to the individual worker and places him at the mercy of the union without judicial recourse, destroying his constitutional right to work.

29. *Incorporate Unions*—The public interest requires that unions should be incorporated and made responsible for the actions of their members in Management-Labor controversies.

30. *Employers' Organization*—Employers have the right to organize in associations or groups to bargain collectively through their chosen representatives.

31. *No Defense Strikes*—During the present emergency while we draft our young men for the army—at twenty-one dollars per month—all Management-Labor disputes in defense industries must be settled peacefully and judicially by conciliation, mediation or arbitration.

(Continued on page 24)

Classifications and Engineering Personnel Under Wage and Hour Law

A LAWYER'S OPINION

R. P. McNULTY

July 9, 1941

Mr. W. Earle Andrews
30 Rockefeller Plaza
New York, N. Y.

Some time ago you asked me about the Wage and Hour Law as it affects your work. I have done quite a lot of work from time to time checking on rulings of the administrator and opinions of counsel and court decisions. The provisions of the Act seem to me to clearly exempt employees such as yours, but the rulings, opinions and decisions have been in such confusion and the continual striving of the Government to extend the provisions of the Act beyond what, in my opinion, it was intended to cover, make it impossible for anyone to be sure that employees are covered and what ones are exempt.

In the first place, it seems clear to me that your work is not considered interstate commerce, but the administrator has ruled and some of the courts have sustained the contention that a building contractor, who does repairs or reconstruction on a building in which is manufactured goods for interstate commerce, is subject to the Act. I suppose he could rule that the employees of an architect or engineer, who draws the plans for such reconstruction work are subject to the Act.

There are rulings that the employees of a contractor on a new building, which is being constructed to house a business engaged in interstate commerce, are not subject to the Act because the building has not yet been used for such purpose, but workmen engaged in maintenance and repairs on the building after it has been used by the firm engaged in interstate commerce, are subject to the Act.

There are rulings that employees of a contractor engaged in digging sand for road construction are not subject to the Act but the employees of a contractor who lays pavement are subject to the Act. They might well hold that the employees of an engineer who draws plans for road construction, are or are not subject to the Act. I can find no opinion or decision on this exact point.

It is impossible to get a clean cut opinion from the officers in charge of enforcing this law at this present time.

So much for the question of whether or not you are engaged in interestate commerce.

On the question of whether or not your employees are doing executive, administrative or professional work, there is as much confusion as on the question of what is interstate commerce. The regulations read as follows:

An employee—

A. Whose primary duty consists of the management of the establishment in which he is employed or of a customarily recognized department or division thereof, and

B. Who customarily and regularly directs the work of other employees therein, and

C. Who has the authority to hire or fire other employees or whose suggestions and recommendations as to the hiring or firing and as to the advancement and promotion or any other change of status of other employees will be given particular weight, and

D. Who customarily and regularly exercises discretionary powers, and

E. Who is compensated for his services on a salary basis at not less than $30. per week (exclusive of board, lodging, or other facilities), and

F. Whose hours of work of the same nature as that performed by nonexempt employees do not exceed 20 percent of the number of hours worked in the workweek by the nonexempt employees under his direction, provided that this subsection (f) shall not apply in the case of an employee who is in sole charge of an independent establishment or a physically separated branch establishment.

As to administrative work:

Any employee—

A. Who is compensated for his service on a salary or fee basis at a rate of not less than $200 per month (exclusive of board, lodging, or other facilities), and

B. Who regularly and directly assists an employee employed in a bona fide executive or administrative capacity (as such terms are defined, in these regulations), where such assistance is nonmanual in nature and requires the exercise of discretion and independent judgment; or

2. who performs under only general supervision, responsible, nonmanual office or field work, directly related to management policies or general business operations; along specialized or technical lines requiring special training, experience, or knowledge, and which requires the exercise of discretion and independent judgment; or

3. whose work involves the execution under only general supervision of special nonmanual assignments and tasks directly related to management policies or general business operations involving the exercise of discretion and independent judgment.

As to professional work:

Any employee who is—

A. Engaged in work—

1. predominantly intellectual and varied in character as opposed to routine mental, manual, mechanical, or physical work, and

2. requiring the consistent exercise of discretion and judgment in its performance, and

3. of such a character that the output produced or the result accomplished cannot be standardized in relation to a given period of time, and

4. whose hours of work of the same nature as that performed by nonexempt employees do not exceed 20 per-cent of the hours worked in the workweek by the nonexempt employees; provided that where such non-professional work is an essential part of and necessarily incident to work of a professional nature, such essential and incidental work shall not be counted as nonexempt work; and

5. (a) requiring knowledge of an advanced type in a field of science or learning customarily acquired by a prolonged course of specialized intellectual instruction and study, as distinguished from a general academic education and from an apprenticeship, and

(Continued on page 24)

Engineers in Training

Proposal Calls For New Designation to Be Used Only by Approved Persons. Movement Has Inception in New York

Notes by **ARTHUR V. SHERIDAN**
Past President, N. S. P. E.

An interesting feature of the recent annual meeting of The New York State Society of Professional Engineers was the "Under-graduate Forum" presided over by past President John C. Riedel of The National Society of Professional Engineers.

This group of about 250 was composed of students from some ten engineering schools located in or near the City of New York. The purpose of the Forum was a general discussion of everyday engineering problems from the students' viewpoint.

It was decidedly apparent that the embryo engineer is primarily a social being. Interested as he may be in the calling he seeks to pursue, he is even more so in the social and economic implications attached thereto. He wishes to be recognized as a candidate for the profession at the earliest possible date. His purpose is to place himself in a more favorable position to participate in formulating plans and programs dealing with the profession of which he hopes shortly to become a member.

As was indicated in the article entitled "Advertise-Organize-Participate" by Daniel J. Houlihan, then Senior at Manhattan College, which appeared in the May-June 1941 issue of THE AMERICAN ENGINEER, the engineering novitiate is seeking a modus operandi whereby his professional and social aspirations may be merged and the study and training behind him made a source of usefulness and hope while en route to admission to the legal practice of the profession. This article noted that the Metropolitan Conference of Student Chapters of the American Society of Civil Engineers had petitioned The New York State Society for aid in the accomplishment of their objectives.

The Forum approved a resolution previously adopted by the Metropolitan Conference and presented the same to the State Society which immediately referred the matter to the Executive Board, which is expected to act upon the same at its first ensuing meeting. There is every reason to hope that in addition to complying with the request of the Metropolitan Conference student groups, The New York State Society of Professional Engineers will, through The National Society of Professional Engineers and individual exchanges, recommend similar action by the various State professional engineering bodies throughout the country.

The resolution is again printed in order that the same may have as wide publicity as possible.

PROPOSED RESOLUTION ADOPTED BY THE METROPOLITAN CONFERENCE OF THE STUDENT CHAPTERS OF THE A.S.C.E.

Resolution

Whereas, persons who are graduated from accredited engineering colleges are not eligible to take examinations for licenses as professional engineers until they have obtained at least four years experience of a grade and character satisfactory to the State Board of Engineering Examiners, and

Whereas, during these four years such persons are not legally recognized as engineers nor qualified for affiliation with state profesisonal engineering societies, and

Whereas, during this period of training such persons, thrown upon their own resources and without the organized guidance and protection of the legally constituted engineering profession, are subject to technical and economic exploitation, therefore, be it

RESOLVED, That the Metropolitan Conference of the Student Chapters of the American Society of Civil Engineers, does hereby request the New York State Society of Professional Engineers to petition the New York State Board of Engineering Examiners to amend its rules so as to permit candidates who have been graduated from approved engineering schools or who have otherwise met the educational or equivalent requirements, to take preliminary written examinations in engineering fundamentals at any time subsequent to the fulfillment of such requirements; with the understanding that a final examination for admission to the practice of engineering or to use the designation "Professional Engineer" will be mandatory upon the completion of the required experience period, and be it further

RESOLVED, That the said Metropolitan Conference of Student Chapters does also petition the New York State Society of Professional Engineers to establish under its direction, and subject to its constitutional requirements, an affiliate association which would permit persons who have satisfactorily passed the preliminiary examinations, to become members thereof and to be designated as "Engineers in Training."

Correction

Editor-in-Chief
American Engineer — July 11, 1941.

Dear Mr. Editor:

I have read your May-June issue with a great deal of interest. Naturally, it is pleasant to see one's own efforts in the company of such excellent work by others.

However, in the interests of both the accuracy of your professional publication and the industrial peace objectives of the U. S. Conciliation Service, I should like to request a correction.

At about the forty-eighth line of the second column on page 20, there is the statement: "Usually, however, a complete argument follows shortly upon the Commissioner's report."

This should read "agreement" instead of "argument". As it is, I think that the statement may lead to confusion on the part of those members of the profession to whom I was attempting to explain a technical service which their Government makes available.

A correction in an early issue will, I think, be of help to both our organizations.

Very truly yours,

J. R. Steelman
Director of Conciliation

The President's Message

"Enforcement"

By **J. W. BERETTA, San Antonio, Texas**
President, National Society of Professional Engineers

THE word "Enforcement," when pronounced, usually has a sinister meaning, and does not often bring pleasant thoughts. It mostly envisions a violent action by law enforcement agencies, and its most popular association is with criminal statutes. In the lay mind, therefore, the less sinister, but none the less important meaning of the word, in its relation to the ethics of a profession and the subsequent protection of the public against improper practice, is often forgotten. In the guardianship of public welfare and safety the term, "enforcement" in its true application is all important in its regulation of a profession. In fact, the basic foundation of engineering registration laws is the furthering of public safety through the enforcement of the standards of practice of the profession of engineering.

Great progress has been made during the past few years in the protection of the public against the malpractice of engineering through the passage of variations of model registration laws for engineers, which are now in effect in forty-four states. Many engineers have adopted the point of view that such laws are in effect monopolistic and tend to restrict practice to a select few. Such an attitude has at times been transmitted to the public with a result that professional progress and proper public relations have been retarded.

It is time that such engineers cease this improper propaganda about registration laws and return to the basic interpretation and principle of protection of the public. The medical and legal professions have long ago recognized this fact, and their own professional progress and recognition have been attained by spreading a proper interpretation among the laymen as well as among their own professions.

If successful professional progress is to be attained, and the basic principles of registration laws are to be properly applied, all such mistaken ideas must be eliminated. A study of most State laws will reveal that engineering Registration Boards can best function when such Boards do not attempt the enforcement of such laws. They are not equipped for "policing," and it follows that if they attempt such "policing," they must neglect their more important functions. This idea is not new, but has stood the test of time through its application to both the medical and legal professions. It follows, therefore, that the engineer can well adopt these other successful examples and can progress further professionally, by adopting them.

Just as every doctor and lawyer is anxious to stamp out malpractice in his profession, so should each registered engineer consider himself an enforcement agent. He should not expect a Board to have a corps of enforcement officers, but should consider such board as strictly a judicial body to act in that capacity when cases of malpractice are reported from other sources, and proper charges filed and prosecuted in a legal manner.

The National Society of Professional Engineers, in recognition of this, has provided for the establishment of enforcement committees. For workability these committees are necessarily small. Every professional engineer, however, should consider himself as an ex-officio member of an enforcement committee and should do everything possible to assist the committee's work. Each chapter should be equipped with a strong, properly organized, and functioning committee, which in turn should report to the equivalent committee in the State Society. The work of enforcement committees of the various State Societies can be counseled and coordinated by the same committee of the National Society.

When a doctor is of the opinion that one of his colleagues is guilty of malpractice, he immediately reports the case to the committee of his own chapter. When an attorney feels that one of his colleagues must be disbarred, he personally brings the matter to the attention of the appropriate committee of his local Bar Association. It is only through this procedure that professions of long standing have really brought about the enforcement of their laws with the attendant furthering of public welfare. In these great professions it is unthinkable that a Board of Medical Examiners or a Board of Bar Examiners should ferret out cases of malpractice and prefer charges in these cases. The only time that the names of a Medical Board or a Board of Bar Examiners is brought into a law suit is when some applicant is endeavoring to force such Board to qualify him in his profession.

It is strongly urged, therefore, that all State Societies of the National Society of Profesional Engineers begin a campaign of organization and support of enforcement committees. By such support they bring new usefulness and dignity to state boards. Engineers must cease to "pass the buck" and must take care of their own house cleaning without waiting for someone else to do it and without attempting to burden state boards with tasks for which they are not organized.

State and chapter enforcement committees must seek ways and means of attaining their true function as guardians of the true and basic principles of engineering registration laws. Clearly the National Society of Professional Engineers, the representative of the engineering profession as a whole has a responsibility in their problem and it must assume that duty if it is to make of engineering a profession as the public conceives a profession should be.

Our Society seeks to serve the professional welfare of all legally defined professional engineers, but to do so with the greatest success it must first serve the public. The most fruitful avenue of public service is to become a working ally of the engineering Registration Boards to such an extent that we eventually become indispensable and our "enforcement" an integral part of the work of such Boards. The fruits of our efforts and service will be bountiful in the recognition of our Society as the logical representative of all registered engineers. There will be the better understanding of our profession by the public; and there will be an enhancement of the standards of the profession. All of these fruits will bring with them a better world for the professional engineer as well as the public whom we serve.

A few of our State Societies have recognized these facts and have splendidly functioning enforcement committees. True greatness and true public service can only be reached when all State Societies have attained this goal. It is time to stamp out any selfish points of view and professional laziness and to follow proven practices that have brought the medical and legal professions to the high public esteem and respect that they enjoy.

Engineering Education—The Registration Board's Point of View

Texas Section of The American Society of Civil Engineers
New Braunfels, Texas, May 10, 1941

By **CARL L. SVENSEN**

Member, Texas State Board of Registration for Professional Engineers

FROM the barber surgeon with the red and white striped pole—symbol of the bandage—to the surgeon of today is a path of many years and many difficulties. Who will doubt the value to mankind or who will confuse the functions of a surgeon with the conditions of long age?

From the early trials by magic and by chance and the tribal judges to the courts and lawyers of today is a path of many years and many difficulties. Who will doubt the value to mankind or who will confuse the functions of our courts and lawyers with the methods of long ago?

From the mechanic and mechanical genius, the machinist and the engineman, the fence builder and road maker of early times, to the professional engineer of today is a path of NOT so many years, a path rather quickly trod, a path with many side paths, a path with steep grades and many turns. The value of engineering to mankind seems to be realized but confusion still reigns in the public mind as to the functions of the professional engineer. Not alone in the minds of the public at large but in the minds of many technically trained men and engineering workers. It is difficult to separate the materials, machines, apparatus, and physical structures from the "powers of the mind" of the professional engineer, who conceives the entire project—The mind which applies the materials and forces of nature to the use and convenience of mankind.

The young man who works in a drug store, around a hospital, or in a doctor's office would never become confused in his mind that he was a doctor. He would expect to prepare for medical school and to take the necessary courses of study followed by a period of supervised practice. Yet there are many more than you would think, who become confused—honestly confused or misinformed—as to the qualifications and the functions of the professional engineer. Laboratory workers, engineering office workers, draftsmen, surveyors, and the multitude of engineering workers and technicians in regular and special types of engineering work are all classed as engineers in the public mind and unfortunately in the minds of many engineering workers.

What engineering is and why an engineering education is essential for the practice of professional engineering needs to be publicized—needs to have accepted, as the necessity for an adequate education for the practice of law or medicine is accepted.

The records of about fifty-seven hundred applicants for engineering registration have been examined thoroughly and carefully by the Texas State Board of Registration for Professional Engineers. The applicants' education and experience have been compared with the progress in engineering and *there is a relation.* There are, as always, apparent exceptions but in such cases the explanation is generally found in fortunate opportunities and fortunate associations with engineer employers.

Hearings for doubtful or rejected applicants have brought out how little known are the qualifications and functions of the professional engineer. A plumbing contractor is a heating engineer in his own mind and in the minds of his friends. The son of a building contractor who has supervised work on some of his father's buildings is a structural engineer in his own mind and in the minds of his friends. Surveying, building some earthen tanks, and a few simple road structures make a civil engineer? A young man with no college training works in a county engineer's office for a few years and picks up the routine work. He feels that he is qualified to be the county engineer. All that is necessary is for the Board to grant him a license. Surely the Board will not prevent his advance ment as a civil engineer. Such applicants become very much incensed when Board members question his qualifications and preparation. Mathematics may be limited to trigonometry or less and mechanics of materials may be an unknown realm but still the applicant feels that he is a real engineer and besides he does not need to know "all those things" in HIS work.

This presents a phase of engineering education which comes within the province of all engineers—education as to the real scope of engineering. This is engineering education of the public at large and is a service of protection—*it is the responsibility of a legalized profession.*

Engineering education involves both engineering and education and is concerned with producing engineers. We say that an engineer is one who uses the principles of engineering.

The Model Law upon which registration laws of many states are based, defines the term professional engineer as follows: "The term professional engineer as used in this Act shall mean a person who, by reason of his knowledge of mathematics, the physical sciences, and the principles of engineering, acquired by professional education and practical experience, is qualified to engage in engineering practice as hereinafter defined.

"The practice of professional engineering within the meaning and intent of this Act includes any professional service, such as consultation, investigation, evaluation, planning, designing, or responsible supervision of construction in connection with any public or private utilities, structures, buildings, machines, equipment, processes, works or projects, wherein the public welfare or the safeguarding of life, health or property is concerned or involved, when such professional service requires the application of engineering principles and interpretation of engineering data."

The expression "engineering principles" is a factor in engineering education, engineering practice, and engineering regstration. Clarification or understanding of this expression became desirable and important in connection with the work of the Engineering Registration Board. Accordingly Secretary Fred Rightor, through the good offices of Dean Woolrich, secured definitions of the phrase from some of the Nation's leading engineers.

From A. A. Potter:

"Engineering principles involve application of physical and social sciences to solution of problems of industry and public works in the interest of humanity."

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Ethics for Engineering Students

By **HARRY A. BALMER**
The George Washington University

(Prize-winning paper in competition for the Daniel W. Mead Student Prize for papers on ethics, *American Society of Civil Engineers*, April, 1940)

I. *What Are Ethics?*

Ethics are standards, determined from a consideration of right and wrong, of what ought to be done. Morals, twin brothers of ethics, are standards of what is done. Considerations of the ethics behind an act judge the morality of that act.

The roots of ethics are in philosophy. Professional ethics are actually philosophic interpretations of the peculiarities of the profession. Philosophic ethics (1) can be reduced to the following four phases:

1. The highest good.
2. Known facts determining the highest good.
3. Sanctions of moral conduct—religious, political, and social.
4. Motives of moral conduct as defined by the sanctions.

This is a good working form for students. They must first determine the needs of the job, or the highest good, from reason and apprehension. Experience will be minor until the profession is entered. Next, sanction the needs, i. e., see if they are right or wrong needs. Lastly find a motive to supply the right needs.

II. *What Have Other Professions Done with Ethics?*

Our professional neighbors use ethics. We may learn much by observing how. Most notable among these are doctors (including nurses), lawyers, and accountants.

Medical ethics (2) are founded on the oath of an early Greek physician, Hippocrates. Their highest good consists of unstinting sacrifice and unfailing industry in the interest of humanity. Cooperation rather than competition among doctors is mandatory, the avoided evil being the pursuit of lucrative rather than dutiful activities. The present code of the American Medical Association is strictly enforced to the extent of being the doctors' Bible of professional action.

Nurses' and doctors' ethics are virtually the same. They are here taken separately only because they include some student aspects not ordinarily found in the Association Standards. There are stable rules governing the conduct of student nurses. An example of the unusual is the considering of needed sleep as a vice. (3) It is illustrated that a student nurse, after a day of rigorous duty, who chooses sleep to the studying of a passage in which she is weak is guilty of satisfying personal desires when duty demands her time. The severity of nursing ethics is pronounced.

(1) Encyclopaedia Brittanica, 14th Edition Vol. VIII p. 758c.
(2) Econ. and Ethics of Medicine, Am. Med. Ass'n 1936.
(3) Garesche', Edw. F., Ethics and Art of Conduct for Nurses.

Legal and accounting ethics differ only on the technicalities of the assignments given to the practitioners. Here is used a form of dual sanction. Acts involving lawyer and client are judged politically; acts involving lawyer and lawyer are judged socially. Individual professionals should serve the client to the extent of his desires or resign as incapable. Loyalty to the profession involves refusal to compete for clients with their colleagues.

III. *What Engineers Have Done with Ethics.*

Engineers, being in a position of greater trust than average businessmen, have set up self-governing rules for earning the right to popular faith and respect (4) The standards for the profession are elevated from the mere legal standards applied to businessmen. The highest good is integrity; the motive social accuracy, social accuracy being correct judgment in the interest of society. A detailed delving into the case history of engineering ethics is beyond the scope of this paper. The codes adopted are based on experience of men already in the profession. We may accept such standards as the best so far provided.

The American Institute of Chemical Engineers adopted a code in 1913 followed a year later by the American Society of Civil Engineers. The American Society of Mechanical Engineers published theirs in 1920. Today the American Society of Electrical Engineers, the American Institute of Consulting Engineers, and the American Institute of Architects all have recognized codes based upon the ethical properties of their jobs. (5)

IV. *Ethics and Economics.*

Throughout all of this we see a conflict within the individual of interest and utility versus duty and justice. Codes of ethics must be administered carefully if they are to carry out their desired purpose. Codes can be followed to the letter and yet perhaps result in the exploitation of one group in a profession to favor personal desires of stronger ones, or at times create a solid monopoly that exhorts lucrative returns from society while enjoying elevated positions of trust.

Principles of economics often suppose that moral acts are a by-product of profit searching. This supposition assumes that for every advantage gained, there will be a reaction to balance any social unevenness. This, however, does not provide a workable social practice. Very often, when the economic man gets out of balance, only ethics can bring order out of chaos. Ethics can provide justice where opportunism fails.

> "Consumption has its ethical as well as its economic aspects and there are heavy moral responsibilities involved in the exercise by the individual of his right of disposal over the wealth which economic forces and social laws have placed in his hands."[6]

V. *What Engineering Students Can Do with Ethics.*

The job of the student is one of preparation. He will act in the future, he observes the present, he analyzes the past. He will be ready then if he does his job well now. This is the keynote of his highest good—a job done well. There is no need for martyrdome or sacrifice, there is no room for the doing of wonderful things. The product of the engineer is utility. The source of utility is the facts

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Ethics of Sales Engineering

By **ALLEN JONES, Jr.**

(This paper was entered in competition for the Daniel W. Mead prize for Junior Members, *American Society of Civil Engineers*, June, 1940 and won *First Prize.*)

THE characteristics of many engineering materials have become so complex that technically trained men are often required as sales representatives, and their conduct must become that, not only of an engineer, but also that of a salesman.

In the competitive field which a man enters, the question of fair play is of immediate importance. Instead of merely holding down a job, he finds himself caught in a strange play of forces; he is called upon constantly to make quick decisions that indicate his company's policies, but which really are spontaneous expressions of his own character.

The position is delicate for a young engineer. Eager and ambitious, he may forget his professional dignity or fail to realize that competitors too deserve a fair deal. By making loose promises, he may land an order, though not sure himself that the promises can be fulfilled. Or by extensive entertainment, he may take unfair advantage of competitors, winning business he doesn't really deserve. Just where should one draw the line?

The answers to most questions are obvious. A man's moral training indicates which is right and which is wrong. But often the problem is not so easy. Should one disclose the defects of a competitor's product? What are the obligations of a salesman to his customer? To his employer?

The study of this type of question constitutes the science of ethics, a broad field which could not possibly be discussed in a brief paper. A young engineer would be more interested in the personal qualities he must develop rather than in a survey of general business standards. For that matter, business ethics are largely dependent upon the personal morals of those participating. The purpose of this paper will be to develop a few thoughts regarding character rather than to list completely the "dos" and "don'ts" of selling.

Unselfishness seems more important than anything else. Honesty has been suggested; but, though it is true an honest man can be very selfish, it is difficult to conceive of an unselfish man being dishonest. The newcomer finds it all too easy to grab for every dollar's worth of business, especially when competitors are making disastrous inroads into his field. But once his reputation is established of having his customer at heart, more and more orders will come his way.

In trying to cultivate an unselfish outlook, one must see beyond the financial gain of the moment and decide what he really wants to be. Philips Brooks offers a splendid guide: "No man has ever come to true greatness who did not feel to some degree that his life belonged to his race, and that what God gives him he gives him for mankind." Though perhaps too impractical for immediate application, the thought may help awaken a more altruistic feeling. One begins to realize the satisfaction of helping others, and his work, instead of being just a job, becomes a profession.

In forgetting himself, he makes a success of life. As Stevenson has put it: "In every part and corner of our life, to lose one's self is to be gainer; and to forget one's self is to be happy."

The type of unselfishness here proposed can exist only in theory. A man must earn a living, must eat, sleep, and be merry. At the same time, he wants to leave something for the world to remember him by. This hope is expressed in the ideals he chooses.

While trying to cultivate unselfishness, he finds other qualities much easier to develop. Strict honesty is essential, especially with customers, because any fraud will tend to break down confidence in the industry. It can become a habit always to tell the truth; and, by being frank with his associates, one gains their valuable confidence.

On his own practically all the time, a sales representative has every opportunity to be dishonest. It is a real test of character when, by promising quick delivery, he can land an order, though he is not sure himself the delivery can be made. Or in accepting a larger order than his company can handle, he gains personally at the inconvenience and possible expense of his customer. That salesman too is dishonest who knowingly oversells a customer; who fails to correct a misunderstanding for fear of jeopardizing an order; who waits over an evening to enjoy a congenial card party; or who "pads" his expense account. Fortunately, his reputation becomes known, repeat orders are not forthcoming, and he learns that honesty is the best policy after all.

Misrepresentation of a product should be especially condemned, because a salesman's false statements are usually intentional. Although the public is protected in some instances legally, many trade associations have joined in censuring any form of misrepresentation, and by maintaining the public's confidence, they continue to operate profitably. The Code of Ethics of the Restaurant Association reads: "Accuracy is not only the absence of actual misstatement, but also the presence of any facts which will prevent the hearer or reader taking a wrong inference or making an incorrect deduction."

Competitors who are also serving the public deserve the same fair treatment that would be expected from them. One cannot simulate the other's product or advertising matter without stealing some of the goodwill he has established. Likewise, if one endeavors to disturb an order already placed, he is attempting the theft of business now belonging to another.

A delicate situation arises when the salesman is called upon for an opinion of a competitor's product. To speak untruthfully, of course, is lying. But when the other's product obviously doesn't fit in, when there are defects which for the customer's benefit should be brought to light, what can one say? Further complications develop if alternate engineering designs have been proposed, because criticism would involve perhaps not only the product but also the technical ability of the competitors.

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Effects of Engineers' Registration

Notes by D. B. STEINMAN

Past President N.S.P.E.

THE value, to the public, of engineers' registration is to be found not so much in the registrations granted as in the registrations denied. In New York and other states, thousands of applications for registration as professional engineers have been denied. Thousands of unqualified men who ignorantly thought they were engineers and thousands of unqualified men who were brazenly holding themselves out as engineers have now been firmly and impersonally told that they are not engineers, that they must not venture to practice engineering, and that they must not display the professional designation or otherwise hold themselves out as being engineers.

These thousands of applicants were denied registration because they were not engineers. They were found lacking in education, in experience, or in character. Not only have these thousands of men been rejected upon application, but thousands of others have been stopped, by official action or persuasion, from practicing engineering or from calling themselves "engineers." The elimination of these thousands of unqualified men from the professional picture has been the essential contribution of engineers' registration to public welfare and safety.

The legal phrase "safety of life, health and property" justifying registration laws is generally construed in too narrow a sense. More than mere structural, mechanical, or electrical safety is involved. There are many other aspects of public welfare and safety that are directly affected by professional competence and integrity. We also need to consider safety of investments, dependability of engineering reports, competence of engineering advice, integrity in financial and contracting relations, and efficiency of planning, design and execution. If the non-professional man is freely permitted to pose as ane professionally qualified, all of these values are jeopardized or degraded. The public needs to be protected against the quack, the incompetent, the unscrupulous and the impostor, who do not belong in our profession but nevertheless practice in its name. The investor needs to be protected against "engineering" reports by the unqualified and the unscrupulous. The client needs to be protected against paying fees to quacks and incompetents who hold themselves out as "engineers." The courts need to be protected aginst the testimony of "experts" who pose as members of our profession. The public needs to be protected against improper planning, inefficient design, wasteful execution, and excessive cost, also against dishonorable dealings. Mere structural adequacy is not the only desideratum.

Investments, fees, confidence, reputation,—all of these have property values, and their safeguarding is a proper concern of any professional registration law. They cannot be safeguarded if the profession is not defined,—if any man, however untrained or unprincipled, may pose as an "engineer." The elimination of thousands of illiterates and pretenders by rejection of their applications, the maintenance of high standards of qualification for those that have been accepted, and the education of the public to the clear-cut demarcation now afforded by registration—all these have definitely helped to establish the desired safeguards for the protection of the public and of the good name of the profession.

Those who cling to the legislative justifying phrase "safety of life, health and property" in its narrowest, literal sense sometimes object to registration legislation on the ground that it benefits the profession. The benefits to the profession are also real and valuable,—but they are not selfish. Whatever raises the standards and the self-respect of a profession also benefits the public. Registration has improved engineering education; it has improved individual preparation; it has improved qualification standards; it has improved professional consciousness and solidarity; it has improved public confidence and esteem. These are not narrow, selfish benefits. They are in the *best* interests of the public as they are in the *best* interests of the profession. They represent real advances and contributions in the highest sense of the obligations and aspirations of a profession.

Now, We Shall Call it "Fostoria Industrial Service"

In a recent Bulletin attention was called to the fact that laws in some States make the use of the name "Fostoria Engineering Service" illegal, unless the personnel of the operation contains a registered engineer.

At the time it was suggested that the word "Electrical" be substituted for the word "Engineering" wherever the latter appeared to be illegal. However, several distributors have objected to this substitution and have suggested that the name "Fostoria Industrial Service" be employed.

Accordingly, and in order to proceed with promotion under the same banner for all, it is recommended that we begin immediately to use the name "Fostoria Industrial Service" everywhere.

This will work some hardship on distributors who already are operating under the name "Fostoria Engineering Service," but we believe that a gradual changeover will not seriously effect them.

Beginning immediately Fostoria advertising and publicity, printed material and bulletins will be changed to feature the new name as new materials are processed.

Legal Aspects of Registration

By **CHARLES P. McCABE**

Lawyer and Engineer, Charleston, West Virginia

THE present State Registration Law for Professional Engineers was enacted by the legislature of 1935 in order, as therein expressed, to safeguard life, health and property. It became effective on May 30, 1935. Similar legislation has now been passed by forty-three states. The West Virginia law is contained in Chapter 30, Article 13 of the Code of West Virginia and, in brief, makes it unlawful for any person to practice or to offer to practice the profession of engineering in this state, or to use any title or description tending to convey the impression that he is a professional engineer, unless such person has been legally registered. The law in brief provides as follows:

Registration Board

A registration board of five professional engineers is appointed by the Governor to pass upon the qualifications of applicants.

Who Is Entitled to Register and Costs Thereof

Seven years experience is required for registration, which may be seven years of actual practice or graduation from an approved engineering school (four (4) years) and three (3) years of practice. In either case the actual practice must be of such nature as to indicate that the applicant is competent to be placed in responsible charge of engineering work. The fee for registration is Ten Dollars ($10) and the annual renewal fee is Five Dollars ($5).

Who Is Required to Register?

By the express provisions of the code "*any person* practicing or offering to practice the profession of engineering * * * shall be registered." (Sec. 1).

The law not only provides that it shall be unlawful for any person to practice or to offer to practice the profession of engineering in this state without being registered, but further provides that "it shall be unlawful for any person * * * to use in connection with his name or otherwise assume, use, or advertise *any* title or description tending to convey the impression that he is a professional engineer" unless he is registered. (Section 1)

Violation of the law is made a misdemeanor, with a fine of One Hundred Dollars ($100.00) to Five Hundred Dollars ($500.00), or imprisonment up to three (3) months or both.

Are There Exemptions to the Above Rule?

With the exception of certain reciprocity provisions respecting non-resident engineers, and the exemption of employees of the United States Government, the only exemption to the general requirements of the law apply to "an employee of a person holding a certificate of registration in this state who is engaged in the practice of the profession of engineering * * *: Provided, that such practice does not include responsible charge of design or supervision."

It is obvious that the purpose of this one exemption is to allow the young engineer to acquire sufficient actual practice to meet the requirements of registration.

Who is a "Professional Engineer" as Defined by Law?

By the expressed provisions of the code (Section 2) "the term 'professional engineer' * * * shall mean a person who, by reason of his knowledge of mathematics, the physical sciences, and the principles of engineering, acquired by professional education and practical experience, is qualified to engage in engineering practice."

What is "Engineering Practice" as Defined by Law?

What constitutes the practice of engineering is also specifically defined by the code (Section 2) as follows:

"The practice of professional engineering within the meaning and intent of this article includes *any* professional service, such as consultation, investigation, evaluation, planning, design, or responsible supervision of construction or operation, in connection with any public or private utilities, structures, buildings, machines, equipment, processes, work, or projects, wherein the public welfare, or the safeguarding of life, health or property is concerned or involved, when such professional service requires the application of engineering principles and data."

Requirements After Registration

The law further provides (Section 9):

"Each registrant hereunder shall upon registration obtain a seal of the design authorized by the board, bearing the registrant's name and the legend, 'registered professional engineer.' Plans, specifications, plats, and reports, issued by a registrant shall be stamped with the said seal during the life of registrant's certificate, but it shall be unlawful for anyone to stamp or seal any document with said seal after the certificate of the registrant named thereon has expired or has been revoked, unless said certificate shall have been renewed or reissued."

Summary

In brief, it may be seen from the above provisions of the law that any person who performs or offers to perform any professional service requiring the application of engineering principles and data must be a registered professional engineer, unless such person is an employee of a registered professional engineer and as such does not have responsible charge of design or supervision.

Can a Corporation Practice Engineering?

The law provides as follows (Section 11):

"A firm or a co-partnership, or a corporation, or a joint stock association may engage in the practice of professional engineering in this state only provided such practice is carried on by professional engineers registered in the state."

Obviously, it is not the intention of the law to require a corporation as such to be registered, for the reason that a corporation is a distinct entity from the individuals composing it and as such distinct entity it cannot meet the requirements necessary for registration as a professional engineer.

This difficulty is met by the requirement of the law that the engineering practice of the corporation must be done by registered professional engineers. And this is so whether such work is done for the corporation itself or for others.

In order that there should be no misapprehension as to the law, the State Registration Board for Professional Engineers sought the opinion of the Attorney General of the State of West Virginia on the following questions:

"1. Where a corporation is engaged in business in which a practice of engineering is only incidental, such as the design and construction of buildings or equipment for the use of the corporation, are the employees of such corporation, engaged in said design and construction, required to be registered engineers?"

"2. In the above case, if the said employees are not registered engineers, is the corporation practicing engineering in violation of the Code of West Virginia?"

The answer of the Attorney General to the first question was that the employees of the corporation are required by law to be registered engineers. The answer to the second question was that the corporation itself was violating the law in the use of non-registered engineers.

Certainly if the design and construction of buildings and equipment for itself by non-registered engineers is in violation of the law by the corporation, the design and construction of buildings and equipment for others would likewise be unlawful.

The above opinion of the Attorney General was dated December 13, 1938, is quoted in full in "The West Virginia Engineer" for July 1939, and is as follows:

"With reference to the first question propounded, it would seem that if a corporation is engaged in the business of designing and constructing buildings or equipment for the use of its employees, which buildings and equipment involve the public welfare or the safeguarding of life, health or property, and require the application of engineering principles and data, within the meaning of Section 2, Article 13, Chapter 30 of the Official Code, as amended by Chapter 103, Acts of the Legislature, 1935, then the act of designing and constructing such buildings or equipment can be undertaken and performed only by registered engineers. The section provides:

"The term 'professional engineer,' as used in this article, shall mean a person, who, by reason of his knowledge of mathematics, the physical sciences, and the principles of engineering, acquired by professional education and practical experience, is qualified to engage in engineering practice as hereinafter defined.

"The practice of professional engineering within the meaning and intent of this article includes any professional service, such as consultation, investigation, evaluation, planning, design, or responsible supervision of construction or operation, in connection with any public or private utilities, structures, buildings, machines, equipment, processes, work or projects, wherein the public welfare, or the safe-guarding of life, health or property is concerned or involved, when such professional service requires the application of engineering principles and data.

"The term 'board,' as used in this article, shall mean the State Board of Registration for Professional Engineers, provided for by this article."

"It is to be observed that Section 2 defines the practice of professional engineering. It is to be noted also with respect to the section that the practice of professional engineering may consist alone of designing or supervising construction work in connection with a public or private utility's buildings or equipment. It is our opinion that the facts appearing from question Number 1 fall wholly within the purview and meaning of Section 2, herein above quoted.

"In answering the second question contained in your letter, it appears to us that if the engineers employed by the corporation, as stated in question number 1, to perform the duties therein set forth, are not registered engineers, then the corporation is practicing engineering in violation of Article 13, Chapter 30 of the Official Code, as amended. You will observe that Section 11, Article 13, Chapter 30 of the Code provides that a firm, co-partnership or corporation may engage in the practice of professional engineering, provided only that such practice is carried on by registered professional engineers."

Reported Evasion of the Law by Corporations and the Engineers Thereof

A typical case may be that of a corporation employing many engineers, none of whom are registered, except the Chief Engineer residing in New York or elsewhere. The plans and designs are prepared here by engineers of experience and sent on for the signature and seal of the Chief Engineer. The signature and seal of the Chief Engineer is forthcoming without any check by him of the plans, except superficially, he having complete confidence in his subordinates.

This is a clear evasion of the spirit of the law and also of the letter of the law because the local engineers, being chiefs of party, project chiefs or squad leaders are actually in responsible charge of design and supervision; they are not employees of a registered engineer, but are employees of the corporation, thus being without the exemption; and no doubt they are classified on the payrolls and other records of the corporation as engineers, and their professional status is set forth on the exemption form under the wage and hour law.

An actual case occured in an adjoining county a short while ago. A dispute arose between two corporations over the boundaries of coal lands. Each corporation was forced to rest its case on the maps and testimony of its employed engineer. The engineer of one corporation was registered; that of another was not. Fortunately the case was disposed of without going to trial, but if trial had been held, objection would have been made to the introduction in evidence of the maps of the non-registered engineer, which, if sustained, would have been fatal to the case of the company employing him.

A late case of record occurred in Pennsylvania where a similar registration law is in effect. The style of the case was F. F. Bollinger Company, a corporation, vs. Widmann Brewing Corporation, decided by the Supreme Court of Pennsylvania in June, 1940. In this case the Bollinger Company contracted with the defendant to prepare plans and specifications for the rehabilitation of the defendant's brewery buildings. In a suit brought to recover compensation for the plans and specifications, the defendant objected to the introduction in evidence of the plans prepared by plaintiff because they were in violation of the regsitration acts. The work not being done by qualified registered engineers, the court held that the plaintiff was barred from recovery.

Incidentally, attention might be called to the effect on a corporation in the case of a catastrophe due to faulty design resulting in a charge of negligence because of the failure of the corporation to employ legally qualified engineers.

(Reprint from The West Virginia Engineer, Aug. 1941.)

National Society Most Recent Activities

Reported on the Undergraduate Forum at the Convention of the New York State Society and Resolution presented by Students.

Reported that in several Federal Agencies, "Engineers in Training" and Junior Engineers are being forced into the Federal Employees Union and into the so-called Engineers' Unions, affiliated with the C.I.O. and A.F. of L.

Engineers, with a view to suggesting means whereby the National Society can recognize "Engineers in Training" through some possible affiliate organization or by such other means as they develop.

Suggested that the matter of problems involved in the foregoing be presented to the National Council of State Boards of Engineering Examiners for consideration at their annual meeting.

Legislative Committee reported,

1. Passage and signing by the Governor of the Engineers' Registration Act in the State of Delaware.
2. Introduction of new Engineers' Registration acts in Illinois, Massachusetts and Missouri but no definite progress to date, other than in Illinois where Act has been reported favorable to the House without opposition.
3. Two cases of Pennsylvania Board refusing registration had been taken to the Board of Appeals for hearing on June 24.
4. Passage of the Federal Coal Mines Inspection Bill, with the retention of the term, "Mining Engineer" in the qualification set forth in the Bill, finally approved and signed by the President.
5. Legislative program of the New York State Society had been most successful in that all but one bill opposed had been defeated; successful passage of the Gerema Bill, permitting joint practice by Engineers and Architects.
6. Preparation by the National Council of State Boards of Engineering Examiners of the Digest of Laws of Engineers' Registration Acts of all States.

An urgent request was made by Legislative Chairman Sacks to the National Directors, urging them to see that the Legislative Chairman of their respective State Societies keeps the National Legislative Chairman closely in touch with Legislative matters in each State and that he be furnished with a copy of all reports made by the State Legislative Chairman. This is of vital importance for purposes of coordination.

Reported on suit brought by the New York State Society of Professional Engineers, Inc., against the "Human Engineering Laboratory, Inc.," and progress to date. It is indicated that it will be necessary to carry this matter through to the New York Court of Appeals.

Proposed amendment to Constitution of N.S.P.E. presented by New York State Society to be presented to membership at such time that vote can be canvassed at next Annual Convention.

The following transmittal from the Texas Society was given consideration:

"Occupational guidance, long recognized as an essential, is now, by reason of the legal requirement of registration, a must function of engineering education.

The Engineers' Council for Professional Development has recommended to Founder Societies that they organize a Counselor Service in cooperation with other societies or independently.

The Society of Professional Engineers in carrying out a program of guidance by counselors, finds itself in a unique position in that it, on its own, can offer such service in any and all fields of engineering.

On its rolls are professional engineers—qualified by training and experience—who can act as counselors—or mentors—to the embryo engineer along any line where guidance is requested or will be helpful.

A service of this kind should, in fact, be one of the main purposes of the Society and it is hoped that there will be no limit to its endeavor to carry on such service.

Recognition by the Travis Chapter of the Junior Engineer is good. May this be just one step in a continued and continuous climb, the culmination of which will bring added glory to the Society of Professional Engineers in its efforts to raise the standards of the engineering profession."

Pennsylvania presented the following:

RESOLVED: that the Pittsburgh Chapter, P. S. P. E. request the State Society to recommend to the U. S. Civil Service that in setting up personnel lists for all applicants that require professional standing that they be registered in the State where they apply.

Developed the following points:

That as yet it has not been found possible to require legal qualification of engineers in Federal employ.

That legal qualification of physicians, surgeons and lawyers were recognized by the Federal Government.

Fact of registration of engineers in forty-three states have not been fully accepted by the Civil Service Commission.

That under certain circumstances Civil Service examinations ask whether an engineer applying possesses a license to practice.

This matter will again be introduced to the Civil Service Commission.

Consideration given to membership status of engineers who move frequently.

Nominating Committee appointed:

H. E. Nold of Ohio, chairman
Robert Coltharp of Texas
F. J. Sette of Virginia
M. D. McDonald of New York
H. E. Babbitt of Illinois

Committee appointed to study ways and means of preparing for the prevention of an economic collapse throughout the United States following the termination of the present defense program after the termination of the present World War. The Committee to make such survey of the United States through such sources as are available and to make recommendations for holding up of unnecessary work and the preparation of plans for work to be started immediately after ending the present emergency.

ILLINOIS

ILLINOIS SOCIETY OF ENGINEERS

Board of Direction

B. C. McCurdy, President, Alex Van Praag, Jr., Vice President, L. D. Gayton, Past President, C. J. McLean, Director to 1945, J. H. Morgan, Director to 1943, H. E. Babbitt, Secretary-Treasurer.

Chapter Representatives

V. C. Crawley, Madison-St. Clair, R. M. Lobdell, Lake County, S. T. Anderson, Capital, Arnold Lundgren, Rock River, W. J. Putnam, Champaign County, E. C. Larsen, Central Illinois, O. M. Andres, Egyptian, David Messer, Blackhawk, James Whelan, Jr., Joliet, F. L. Osborn, Illinois Valley.

Chapter Officers

Blackhawk—P. J. Malay, President, Sam Comess, Vice President, C. E. Rylander, Secretary-Treasurer, D. L. Messer, Chapter Representative.

Capital—W. B. Worsham, President, R. L. Whannel, Vice President, G. J. Mullen, Secretary-Treasurer, S. T. Anderson, Chapter Representative.

Central Illinois—E. E. Cooper, President, Carl Fox, Vice President, Alex F. Campbell, Director, H. L. Chastain, Secretary-Treasurer, E. C. Larsen, Chapter Representative.

Champaign County—G. W. Pickels, President, W. A. Oliver, Vice President, H. L. White, Secretary-Treasurer, W. J. Putnam, Chapter Representative.

Egyptian—Wm. Faulk, Jr., President, Carl Wiemken, Vice President, Arthur Lee, Director, William Howe, Secretary-Treasurer, O. M. Andres, Chapter Representative.

Illinois Valley—F. L. Osborn, President, Fred Renz, Vice President, Judd Wetherby, Secretary-Treasurer, F. L. Osborn, Chapter Representative.

Joilet—C. M. Noethling, President, Fred H. Tittsworth, Vice President, C. B. Garnsey, Secretary-Treasurer, James Whelan, Jr., Chapter Representative.

Lake County—C. S. Pester, President, M. T. Anderson, 1st Vice President, G. L. Watson, 2nd Vice President, Andrew Klarkowski, 3rd Vice President, G. M. Dixon, Secretary-Treasurer, R. M. Lobdell, Chapter Representative.

Madison-St. Clair—Charles F. Manion, President, J. L. Tritt, Vice President, E. A. Post, Secretary-Treasurer, V. C. Crawley, Chapter Representative.

Rock River—L. T. Sampson, Acting President and Vice President, A. H. Ferger, Secretary-Treasurer, Arnold Lundgren, Chapter Representative.

INDIANA

NEW OFFICERS

President: Clyde A. Walb, 2511 Taylor St., Fort Wayne, Ind.

First Vice-President: Ralph E. Simpson, 11 S. Meridian St., Indianapolis, Ind.

Second Vice-President: Asher Gray, Wabash; Engineer Wabash County.

Secretary: James E. Loer, Indianapolis; Traffic Engineer, City of Indianapolis.

Treasurer: C. E. Vogelgesang, Indianapolis; Road Design Engineer, State Highway Commission of Indiana.

National Director: S. G. Cohen, Indianapolis; General Superintendent, Maher Construction Co.

State Director 1944: Glen H. Allen, Vincennes; Contractor.

State Director 1944: Harry B. Overesch, Lafayette; City Engineer.

A little more than four years ago a husky infant was born. The ISPE, under the able direction of its first two presidents, Sultan Cohen and Ole Johnson, has grown to a husky youth with 462 members. Its place in the profession has been firmly established in Indiana, with the support and blessings of the technical organization of engineers in the State.

We now have the task of consolidating the gains made in these four years, reviewing them, and then setting up our next objectives. When we stake out this new course, it will be a guide for concentrating the enthusiastic work of the entire membership upon these objectives.

MISSOURI

MISSOURI SOCIETY OF PROFESSIONAL ENGINEERS

Past Presidents Applaud Passage of Bill

The passage by the Legislature of the Architects' and Professional Engineers' Act, should be an epochal occasion for the architects and engineering professions in Missouri and should prove the foundation upon which can be built a professional structure that will redound to the benefit of all architects and professional engineers, and the state as well. All following these two vocations should be jubilant today.

Years of persistent effort have finally been rewarded and the result is due to courageous determination displayed throughout the years by unselfish individual architects and professional engineers, and, in the later years, by the Missouri Association of Architects and the Missouri Society of Professional Engineers. Only concerted cooperation and coordination has caused the successful consummation of this constructive legislation, and all who gave their time, energy, and material aid are to be commended.

R. P. Cummins.

It is hard to believe that the Engineers and Architects of Missouri are about to realize the successful completion of about thirty years of effort to secure professional recognition. The Legislature is to be commended for their recognition of a most worthy bill.

We should be particularly grateful for the excellent manner in which our special Legislative Committee has handled this difficult task. The Engineers and Architects of Missouri can now look their profession square in the face with all the pride and confidence that goes with legal professional standing.

E. W. Carlton.

Statement of President Black

Replying to your wire of this morning relative to the passage of the registration bill, I think the Senate and House deserve the sincere thanks of all Architects and Engineers who have the best interests of their clients at heart and who work for the advancement of their professions. The people of Missouri should realize the bill provides added safeguards for life and property and removes the state from the unenviable position of being one of five states without a registration law.

E. B. Black.

NEW JERSEY

President ..... S. Herbert Taylor
First Vice-President ..... Russell S. Wise
Second Vice-President ..... C. George Krueger
Secretary-Treasurer ..... Frederick D. Braun
National Society Director ..... George F. Randolph
Trustee-at-Large ..... Philip Kissam
Trustee-at-Large ..... C. Benson Wigton
Past President ..... Spencer C. Hamilton, Jr.
Past President ..... Ernest F. Weeks

While our Society was in favor of having legislation passed making an appropriation to the Department of Conservation and Development, to bring the topographic maps up to date, by and with the help of the Federal Government, legislative economy prevented our getting favorable consideration.

Your Committee however was active in support of the following Bills:

FOR—S. 27 by Hendrickson. Provides for summary arrest of bus and trolley car operators intoxicated while operating such vehicles. Approved, June 24, Chapter 139.

FOR—S. 84 by Scott. Provides that township voters determine creation of sewerage districts and choose commissioners to administer such districts; permits commissioners to issue temporary improvements notes in anticipation of permanent construction bonds. Approved, April 22, Chapter 46.

FOR*—S. 93 by Stout. Exempts contracts for professional services from law requiring municipalities to appropriate in separate ordinance costs of contracts not included in budget appropriations. Bill not passed.

FOR—S. 100. Appropriates $42,900,000 out of State Highway fund to State Highway Department, Motor Vehicle Department, Motor Tax Division. OPPOSED other provisions that diverted highway monies to other than highway purposes. Approved July 8, Chapter 189.

FOR*—S.-143-144 by Scott. Validates creation of township districts for sewers and sewage disposal plants, power to hold property and to assume liability, etc. Approved April 22, Chapter 48 and 49.

FOR—S. 259 by Wilensky. Appropriates $3,500 from State Water Policy fund for engineering, legal, travel and incidental expenses of Special Committee on Water Supply. Approved June 18, Chapter 129.

FOR—S. 295 by Proctor. Appropriates $20,000 to State Planning Board, out of this appropriation the State Planning Board was to be the sponsoring agency for the continuance of the Geodetic Control survey into the municipalities; this Bill is still up on second reading in the Senate.

FOR—S. 310, by Loizeaux. Appropriates to State Water Policy Commission unexpended balance in water diversion fund, this money to be used to continue studies of flood control in Elizabeth and the Pequest River and water supply studies, etc. Approved November 19, Chapter 221.

FOR—SCR. 4 by Scott. Creates special Committee on Water Supply to confer with the Governor for the purpose of formulating plan for the solution of the water supply problem of the State. Passed.

FOR—A. 214 by Freund. Creates North Jersey Transit District and North Jersey Transit Authority of six members, to cordinate transit facilities in Northern New Jersey.

NEW YORK

HIGHLIGHTS OF THE 14TH ANNUAL CONVENTION OF THE NEW YORK STATE SOCIETY OF PROFESSIONAL ENGINEERS

President Zurmuhlen, opened the convention with an address of welcome, which was followed with a talk by Engineer Walter D. Binger, Commissioner of Borough Works for Manhattan, also Chairman of the National Technological Civil Protection Committee, whose topic "National, State and City Defense" sounded a warning that the protection of civilians and civilian property against explosive, incendiary and gas bombs of modern warfare is not entirely a function of military forces.

Round-table discussions were held participated in by Engineers, Architects and Manufacturers, and presided over by Vice-President Engineer Hubert E. Snyder, the topics being "Better Cooperation between the Professions" and "Engineering Services by Manufacturers."

A series of addresses was commenced, the first by Engineer Arthur V. Sheridan, City Planning Commissioner—Topic: "Municipal and Regional Planning." The second by Engineer Seth G. Hess, Chief Engineer, Interstate Sanitation Commission—"Sanitation and Defense in the Metropolitan District." The third by Engineer Ole Singstad, Chief Engineer, New York City Tunnel Authority—Topic: "Tunnels of New York City."

Engineer John C. Riedel, Chief Engineer of the Board of Estimate, City of New York, related the Origin, Development and Progress of the National Society of Professional Engineers.

President Zurmuhlen called the meeting to order on the morning of Saturday, May 10, by appointing Tellers of Election, charging the Resolutions Committee, and after a roll call of officers and delegates, proceeded to hear reports of officers, committees and then followed the report of the Tellers' Committee for the election of officers and zone directors, which report resulted in the election of the following:

President ..... Frederick H. Zurmuhlen
1st Vice-President ..... Hubert E. Snyder
2nd Vice-President ..... James F. Fairman
Financial Secretary ..... Ernest F. Fox
Treasurer ..... Patrick M. Corry
Director, Zone 1 ..... William H. Larkin
Director, Zone 2 ..... Fred J. Biele
Director, Zone 3 ..... George A. Sallans

A resolution submitted by the Steuben Area Chapter was adopted advocating that the New York State Board of Examiners for Professional Engineering credit to an appropriate extent candidates for examination for the license to practice Professional Engineering in the State of New York with time spent in the armed forces of the United States to the end that such persons shall not be penalized for sacrifices made in behalf of the national emergency.

A resolution submitted by Albany County Chapter was adopted recommending the establishment of a New York Coordinate System pursuant to Chapter 545 of the Laws of New York, 1938, especially that portion which provides that the work necessary to properly mark and identify on the ground the location of designated positions shall be supervised or performed by the New York State

Department of Public Works in cooperation with the United States Coast and Geodetic Survey.

A resolution submitted by Kings County Chapter was adopted recommending that the National Society of Professional Engineers consider the practicability of informing the membership, either through THE AMERICAN ENGINEER or by means of a special legislative bulletin, of the nature and effect upon the profession of pending pertinent national legislation.

Another resolution submitted by Kings County Chapter was adopted strongly recommending that Professional Engineers called for National Defense purposes be assigned to such branches of service as their engineering training may recommend.

Another resolution submitted by Kings County Chapter was adopted petitioning the National Society of Professional Engineers to seek the passage of appropriate legislation for the purpose of expanding and extending the Social Security Act, especially with respect to persons of sixty-five years of age and over, and self-employed persons.

OHIO

Growing activities of the Society makes us need more office space. We've moved to Room 500 same address, 63 South High Street.

Active Members—July 1, 1941—886.

Don't put on too much of a mental struggle during the hot weather—but as many of you as feel artistic talent stirring within you might try your brains and hands for the good of our Society and a prize of $10 to the winnah in designing a seal for the O.S.P.E.—founded in 1878, incorporated in 1941. These seals are to adorn the plaques that set forth the official charters of the chapters. Here are the rules as decided at the Executive Committee meeting on July 11:

1. All designs submitted will become the property of the Ohio Society.
2. Designs must be submitted to the office of the Society by September 1, 1941.
3. The decision of the committee appointed to select the winning design will be final.
4. A prize of $10 will be given for the design selected for the Society's seal.

Committee on Executive, Legislative, and Public Employment Salaries is working for the reclassification of the engineering personnel. The Society will be consulted by the Civil Service Commission when specifications are prepared to accompany the salary schedule.

Twelve thousand copies of the minimum-fees-and-salaries booklet will be printed for distribution to all registered engineers in Ohio with the cover in "mandarin," a shade of orange, in honor of Treasurer Walter Graf's necktie.

When the Board and the Hocking Valley Chapter had the joint meeting at Logan on June 6 the life of the party was the presiding officer, President Olin B. Stout of Middleport, president of the Hocking Valley Chapter. We were shocked to hear of Obie's death on June 29 from complications following an appendicitis operation.

We must make the sad announcement of two other recent deaths of members. One is J. Pritchard Hannah, of Portsmouth. The other is Thomas W. Philipps of Newark, past secretary of the Central Ohio Chapter.

PENNSYLVANIA

ANNUAL MEETING PENNSYLVANIA SOCIETY OF PROFESSIONAL ENGINEERS

The Fall Meeting of the Pennsylvania Society of Professional Engineers will be held in Scranton on September 19th and 20th. The Northeast Chapter will be the host to the gathering, and all indications are that this meeting will be a mile post in the annals of our Society.

A most interesting program is being arranged for the meeting. Matters of great importance to the professional engineers of our state will come up for discussion, and every member is urged to be present. There will be addresses by prominent men. However, it will not be all business. A number of entertaining features and also interesting visitations are planned.

Scranton is known as the Anthracite Capital. A visitation to a coal mine and also to a coal breaker will, therefore, be arranged for Friday. As Scranton is the home of the International Correspondence Schools, a visitation to that world-famous institution is also planned. The inhabitants of Scranton are known for their love of music. The Welsh miners brought with them a talent and fondness for music, and their descendants have retained those qualities. Ample proof of it will be furnished at the evening dinner on September 19 and at the noon luncheon on September 20. The singing will be by a miners' quartet, who have sung in many cities and on radio programs. There is also a good possibility that a famous humorist will entertain at the dinner.

These are but the highlights of the meeting. It will be work mixed with good fun for all present. Every member of our Society owes it to himself to mark the dates September 19 and 20 on his calendar and be sure to attend what promises to be one of the outstanding meetings in the history of our Society.

This year, the City of Scranton has good reasons to outdo itself in hospitality to visitors. It is celebrating the One Hundredth Anniversary of its foundation and the Seventy-Fifth Anniversary of its being incorporated as a city.

The Northeast Chapter is one of the youngest chapters of the Pennsylvania Society of Professional Engineers, as it was started as late as May, 1940. But, it has proved itself to be one of the most active and fast-growing among our chapters. Engineer Samuel Baker, Dean of the Schools of Technology of the International Correspondence Schools, is president of the Chapter; Engineer Charles Enzian, a consulting mining engineer and geologist, is the vice-president; Engineer Samuel G. Mastriani, County Engineer of Lackawanna County, is the secretary; Engineer W. H. Bircher, Chief Engineer and General Superintendent of Sweeney Brothers, General Contractors, is the treasurer; and Engineer J. Rossa McCormick, a coal operator and member of the Scranton City Planning Commission, is the state director. Engineer H. H. Otto, Chief Mining Engineer of the Hudson Coal Company, is General Chairman of the Convention Committee.

All sessions of the annual meeting will be held at Hotel Jermyn, and Engineer James S. Devlin, President of our Society, will preside at them.

Their tentative schedule is briefly:

Registration fee $1.50—Registration to start Friday, September 19, at 1:00 P.M. (E.S.T.) *All time Eastern Standard.*

Friday afternoon—Committee Meetings.
Friday 6:30 P.M.—Banquet followed by Executive Board Meeting. National Secretary Larson, Guest.
Saturday—General Sessions.
Saturday Luncheon—Noon.
All activities at Hotel Jermyn.
Robert Hall Craig, Toastmaster.
President Beretta—General address at banquet.

Entertainment at present proposed:
Hudson Coal Company Miners' quartet.
Con McCole—Humorist.
Trip through a mine and breaker.
Trip through International Correspondence Schools.
Trip through large silk mill.
Trip through Scranton Lace Company.
Trip to the Tunkhannock Viaduct.
Trip for the ladies Saturday A.M. and a bridge party Saturday P.M.
Tennis facilities at Scranton Tennis Club.
Golf at one of the Scranton Golf Clubs.

TEXAS

Officers

President—John D. Miller, Austin
First Vice President—H. R. F. Helland, San Antonio
Second Vice President—R. B. Cruise—Beaumont
Secretary-Treasurer—R. S. Guinn, Austin
National Director—Robert Coltharp, Austin
Past President—Walter E. Seaholm, Austin

Directors

Julian Montgomery, Austin
E. C. H. Bantel, Austin
T. B. Warden, Austin
J. T. L. McNew, College Station
A. C. Loyd, San Antonio
O. L. Hazelwood, Palestine
E. L. Myers, Dallas
W. L. Talevich, Galveston
Ben F. Shipley, Beaumont
Chas. P. McKnight, Houston
Datus E. Proper, San Antonio
James P. Exum, Austin

COMMITTEES

Ethics and Practice

G. G. Wickline, Chairman, Austin
W. L. Eyres, San Antonio
Chas. A. Clark, Austin
T. J. Kelly, Beaumont
Irwin A. Uhr, San Antonio
F. K. Dodge, Liberty
W. A. Lawson, Port Arthur

Legislative

E. L. Myers, Chairman, Dallas
Gibb Gilchrist, College Station
Ben F. Shipley, Beaumont
Trigg Twichell, Austin
Chas. P. McKnight, Houston
Munsey Wilson, Austin

Enforcement

E. W. Robinson, Chairman, San Antonio
A. C. Kellersberger, Austin
Jos. C. Beck, Beaumont
H. F. Sutter, Fort Worth
C. E. Roark, Port Arthur
E. N. Noyes, Dallas
J. W. Waller, Yoakum

Public Relations

Trigg Twichell, Chairman, Austin
S. D. Breeding, Austin
Ben F. Shipley, Beaumont
T. C. Forrest, Jr., Dallas
J. A. Shelby, Austin
W. L. Talevich, Galveston

Membership

T. B. Warden, Chairman, Austin
G. M. Garrett, Lubbock
R. L. Schmidt, Austin
Herman F. Barsun, San Antonio
J. L. Mell, Austin
R. C. Black, Beaumont
Chas. P. McKnight, Houston
Leo Ehlinger, Brownwood
E. S. Collins, Dallas

Chapter Activities

R. B. Cruise, Chairman, Beaumont
J. L. Ririe, San Antonio
G. S. Moore, Austin
Barnes Hoff, Brownwood

Rules

Elgin B. Robertson, Chairman, Dallas
Oscar A. Seward, Jr., Groesbeck
Marvin C. Nichols, Fort Worth
P. M. Ferguson, Austin

Resolutions

R. J. McMahon, Chairman, Austin
David R. Pena, Tyler
F. W. Fleming, Orange
M. R. Mitchell, Austin

Audit

R. J. Hank, Chairman, Austin
T. N. Picnot, San Antonio
D. M. Neer, Austin
H. A. Barr, Port Arthur
G. G. Commons, Austin

Nominating

T. E. Huffman, Austin
J. L. Ririe, San Antonio
O. B. Hartzog, Port Arthur
Henry Harkleroad, Austin
T. C. Forrest, Jr., Dallas

Membership in the Texas Society has increased about ten percent since January 1, 1941. A new chapter—the State's fourth—was organized at Houston April 10, 1941. The Houston engineers are to be congratulated for their new chapter. Twelve hundred registered engineers live in the Houston area and the chapter will soon be the largest in Texas, and possibly one of the largest in the United States. Engineers representing practically all branches of our profession reside in the area, because of its broad industrial and other developments requiring the services of engineers. The following officers were elected at the organization meeting:

Joe Dannenbaum, President
Chas. P. McKnight, Vice-president
Edward G. Pearson, Secretary-Treasurer

WEST VIRGINIA

WEST VIRGINIA SOCIETY OF PROFESSIONAL ENGINEERS

State Office

Kanawha Hotel, Charleston, W. Va.

Mailing Address

Box 249, Charleston, W. Va.

Officers

President—H. W. Saunders, Coopers
First Vice President—Theodore Bloecher, Wheeling
Second Vice President—Owen M. Jones, Glen Ferris
Treasurer—Robert Williamson, Jr., Charleston
Secretary—Ross B. Johnston, Charleston

Directors

J. Paul Blundon, 1941, Keyser
Kyle L. Bruce, 1941, Bluefield
Wm. S. Downs, 1941, Morgantown
George C. Barnes, Jr., 1941, Williamson
John R. Seckman, 1942, Clarksburg
J. M. Clark, Sr., 1942, Charleston
A. O. Baxter, 1942, Marlinton
H. A. Levering, 1942, Huntington
C. P. Fortney, 1943, Charleston
J. H. McKinney, 1943, Parkersburg
Ernest L. Bailey, 1943, Charleston
Charles Snyder, 1943, Fairmont
Roland P. Davis, Ex-Officio, Morgantown
M. L. O'Neale, Ex-Officio, Charleston

Executive Committee

Robert Williamson, Jr., Chairman
Ernest L. Bailey
George C. Barnes, Jr.
Kyle L. Bruce
J. M. Clark, Sr.
Charles Snyder

STATE CONVENTION AT BLUEFIELD

At a special meeting of the Board of Directors of the West Virginia Society of Professional Engineers, held Saturday, July 19, at the state offices at the Kanawha Hotel, Charleston, it was voted to hold the 1941 State convention at Bluefield, October 23, 24 and 25.

Governor M. M. Neely has been invited to deliver the principal address to the convention on Friday, October 24. Mr. J. W. Beretta, of San Antonio, Texas, president of the National Society of Professional Engineers, also has been invited to speak at the convention.

Bluefield and the large area served by that city is making elaborate plans for the convention, and confidently expects to outdo the example of hospitality that featured the convention held there in 1937.

ANNUAL CONVENTION—BLUEFIELD OCTOBER 23-24-25

Dear Engineer Beretta:

We feel that the West Virginia program is surprisingly close in line with your views as expressed in the May-June issue of THE AMERICAN ENGINEER. To be specific, West Virginia has already started a number of plans recommended by you as follows:

1. State headquarters have been established, staffed by a full time secretary and adequate personnel. These headquarters are in a centrally located hotel, making state headquarters for engineers of all branches, and are being accepted as a convenient meeting place for small groups in the evenings as well as during the day.

Every branch of engineering is encouraged to use the service of the office. The electrical engineers and the oil and gas group have the state office do their clerical work. The recent established West Virginia Society of Architects does likewise. Considerable work is done for mining, mechanical, chemical and civil engineering groups. Also a number of local meetings are held each year in which the Professional Society group join hands with the local Founder groups. Last year at the State Convention of Professional Engineers each Founder group was encouraged to have its own sectional meeting at the same time and place. At this year's convention each Founder society will be given a place on the general program to present a non-technical discussion of cooperative effort.

2. Local chapters in various cities have encouraged engineering students to affiliate with them, such as at Morgantown, in connection with the State University, at Wheeling in connection with Linsley Institute, and at Huntington in connection with Marshall College. Two similar groups are being established at Charleston this fall, one in connection with West Virginia Institute of Technology, and the other with Morris Harvey College. Study groups of young graduate engineers are held regularly here as indicated by enclosed pages concerning the Charleston Junior Engineers. The Junior and senior engineering students, as well as the young graduate are accepted as Junior Engineers in the West Virginia Society of Professional Engineers and may attend any of its meetings. They pay a nominal fee of $1, in return for which they receive the *West Virginia Engineer* each month.

West Virginia engineers are not limiting their efforts to promoting better understanding between the old and young engineers of all branches. They are fully as much interested in bringing engineers and representatives of the various industries which employ engineers to a position of more complete understanding of common problems. This was illustrated at a recent meeting at Charleston of some score of outstanding engineers and representatives of the leading industrial groups of West Virginia. We enclose report on this round table conference to give you a more complete picture. We feel sure that it has cleared up misunderstanding that previously existed in certain industries.

3. Of course, membership is the life blood of this and all similar organizations. Most of the things mentioned above have this in mind. But we take it that the efforts that have been made have done more to increase interest in registration than merely to have a selfish interest in increasing membership, we firmly believe that if we can get the greater majority of practicing engineers in West Virginia registered, (if they are qualified to be registered) that membership in this organization will come without particular effort.

4. As a means of a regular contact between engineers, architects, contractors and the official and industrial life of West Virginia, a regular monthly publication, *The West Virginia Engineer Magazine,* is issued. This publication seeks to stress information concerning professional development and such matters as will interest engineers, no matter in what branch of the profession they may be engaged. This means local, state and national comment. The magazine is not only self sustaining but has shown a profit which has made available the extra revenue, over and above the limited return from membership dues, to maintain the State Headquarters.

Ross B. Johnston

Engineering Among the Professions

This incident concerns engineering and the daughter of a well-known Society member. We will call her Margaret. She is a student at a leading woman's college in the East. Recently as one of her regular assignments in sociology, her professor, a man, assigned her the preparation of a paper on the development of some important profession. He even listed suggested professions—the list contained optometry, but not engineering.

As a loyal daughter, steeped in pride of her father's calling, not to say profession, Margaret asked if she could write on engineering. The professor demurred since he "doubted whether engineering had proper organization and legal qualifications, commonly associated with the real professions." In short, he questioned whether it could be considered a true profession. After discussion, he left this question to Margaret, and she quickly decided on the subject of engineering.

During her Easter vacation, her father gathered for her publications on the Founder Societies, the Engineers' Council for Professional Development, and the National Council of State Boards of Engineering Examiners, and related material dealing with the history and professional aspects of engineering. Even the Headquarters staff was called upon for additional data.

The paper was prepared with gratifying results. The professor agreed that his thoughts on the matter had been clarified and edified; Margaret got an "A" on her paper—a quite unexpected recognition.

The moral of the incident lies in the common understanding of engineering. Here, the professor quickly admitted his misjudgment. But if a well-informed man could be relatively ignorant on this subject, it behooves the profession to bestir itself. The general public will not read 5,000-word papers just to become enlightened.

Congratulations to Margaret!

G. H. Hutchinson
23 N. Grandview Ave.
Crafton, Pittsburgh, Pa.

Do Not Forget

1942

Annual Convention

N.S.P.E.

Atlantic City, New Jersey

April

Engineering Education

(Continued from page 9)

From A. G. Christie:

"—The principles of engineering are the means of achieving a purpose or producing a result through the application of the laws of mathematics, physics, chemistry and mechanics as modified by experience and judgment."

From S. B. Earle:

"Principles of engineering involve not only a knowledge of what engineering is but the ability to apply the knowledge by mathematics and physical science to the solution of problems arising in the engineering field. This includes method of attack used by engineers. Man may be a good scientist without qualifying as an engineer."

From Karl T. Compton:

"I assume that the principles of engineering as used in the model law is intended to describe the processes of application of the physical sciences to practical purposes. The physical sciences include physics, chemistry, geology, biology, mechanics, thermodynamics, strength of materials, electricity, et cetera.—"

From Fred E. Rightor:

"The principles of engineering are those fundamental rules of mathematics and the physical sciences which are used to produce engineering results."

From all of these definitions we receive the same impression—that of the inclusiveness of the fundamentals of engineering—that engineering cannot be confined within strictly definite limits. Since engineering education must provide for the initial study of the principles of engineering and point the way for the application and further development it follows that engineering education must be equally inclusive.

It has been said that "Education is not learning; it is the exercise and development of the powers of the mind; and that the two great methods by which this end may be accomplished are in the halls of learning *or* in the conflicts of life."

First, I want to change the word *or* to *and,* and say that two methods are necessary to accomplish an education especially an engineering education—the halls of learning and the conflicts of life—experience. Both are essential for an engineering education like engineering itself is never completed.

Dr. Vannevar Bush has put a similar thought about engineering into these words.

"Engineering, however, is derived jointly from the quiet cloisters of science, and the turmoil and strife of aggressive business; and it is no wonder that it should wobble a bit as it seeks to evolve its own professional philosophy."

The evolution of this professional philosophy is one of the components of engineering education. As the twig is bent so the tree will grow and so it is with the philosophy which characterizes engineering as a profession, must become a part of engineering education from its beginning in the halls of learning and on through the continuing growth of an engineering career. These characteristics have been well stated in the following paragraph (from *Civil Engineering* of October 1930).

"The engineer who considers *his calling* to be a *profession* will be interested to learn the obligations he has assumed to justify so high a status. A professional man must, of course, possess special knowledge and skill and the ability to exercise them, but, of equal or greater importance, he must possess altruistic characteristics and he must conform rigidly to a code of ethics of a high order."

With such a philosophy of engineering it can no longer be said that one has completed an engineering education. We know that nothing is ever completed in this world. When an engineering project appears to be completed the problem of maintenance presents itself as a factor of major importance. This may be followed by modifications, improvements and adaptation to different conditions or different purposes and finally with changed conditions many projects are faced with the necessity of replacement.

And so it is with engineering education. The halls of learning can point to ways and means and provide the structure of an engineering education. This structure, however, must be maintained and kept in repair, changes must be made to keep up with new requirements, additions are frequently necessary and replacements must be made as new methods, new materials and new requirements are presented by the progress of engineering Engineering education is a continuing process for the professional engineer. The important and most valuable means of maintenance and progress consist of the great national or founder societies, association with other engineers, contacts at meetings such as this one, by publications, by cooperation with other societies and active interest in engineering education. Industry has provided the means for research and improvement in many lines of engineering. Experience points the way to improvement and progress but experience must be analyzed for its adaptation to tomorrow's practice. Graduate study is another means of making additions and replacements to the structure of an engineering education. This is a valuable means, if EXPERIENCE in engineering practice has intervened to indicate where additions and replacements can be of the most value.

There is no intention of advocating too much specialization in engineering education. On the contrary a thorough grounding in fundamentals—mathematics, the physical sciences, and the general principles of engineering should form the basis for all engineering education. By thorough grounding is meant such a knowledge and understanding as will enable one to THINK in the language of mathematics, in the language of graphics and above all to think in the language which we use—English—to think fluently and accurately to the extent of one's training so that full use can be made of each educational tool. It is better to be able to think clearly in algebra than *"to have had algebra and calculus"* and not be able to use either of them with facility and understanding.

The Texas State Board of Registration for Professional Engineers has been vitally concerned in this matter of engineering education. Applicants who have not graduated from accredited courses (most State Boards use the E.C.P.D. accrediting) or men who have incomplete or no formal engineering education are required to pass an examination before they can be registered. This is a requirement of the State registration law which, for such applicants, considers as minimum evidence: "Successfully passing a written, or written and oral, examination designed to show knowledge and skill approximating that attained through graduation from an approved four (4) years engineering course; and a specific record of at least eight (8) years of active practice in engineering work of a character satisfactory to the Board and indicating that the applicant is competent to be placed in responsible charge of such work."

The wide range of educational qualifications and the great diversity of experience of the applicants present a very real difficulty. At first the examinations were in three parts—(a) fundamentals common to all engineering, (b) general field, and (c) special field. The number and peculiarity of special fields for which examinations can be sought are beyond imagination. The experience gained from each examination has brought about changes in procedure. One of the results has been the placing of greater emphasis on the fundamentals. Another has been the elimination of the part covering a "special field." It has been a very frequent remark of applicants that they really know their "special field" of engineering but that they should not be expected to pass an examination on fundamentals—that they do not need or use such elementary material in their work. However, experience has brought out a different answer—an answer which appears as perfectly logical. It has been found that applicants who cannot pass the fundamentals very seldom pass their special field. The conclusion is a natural one, that a man may learn to do certain things without knowing why, but in order to think and apply engineering principles he must know and understand the basic fundamentals of mathematics, the physical sciences, materials, and so on. It has been found that the men who pass the part of the examination on fundamentals rarely fail to pass in the professional part of the examination. The present arangement (which, of course, is subject to further changes) is to require applicants to pass the fundamental examination with a minimum grade of seventy per cent before they are admitted to the professional part of the examination.

National defense needs have turned a realistic light upon matters of engineering training and education. Men who have had training in the basic sciences and mathematics through one or two years in college can be prepared for many kinds of engineering work by intensive courses of short duration. There is a lesson in this, indicating what might be desirable in more normal times when a better correlation of the basic training and the special training could be worked out.

Just as engineering projects differ in construction according to the purpose for which they are intended so should engineering education vary. Engineering workers and engineers should build their education to meet their needs, according to the purposes which they can best pursue in life—and so engineering education cannot and must not be static. There are trends in engineering which can be recognized and provided for in engineering education but the maintenance and development or *re-education* which are necessary to keep up with the progress of engineering are ever present factors in the practice of engineering.

The Engineering Registration Board has a real interest in this whole matter of engineering education. The relation between education and registration is going to become more and more intimate as time goes on. The very nature of engineering development as a profession is such that an engineering education will become the only means of entering upon such a career, as it now is in medicine and law. The requirements of registration must be kept in step with the advancing standards and the broader and deeper qualifications of engineering and engineering education.

In closing I want to quote from Henry Ward Beecher who put into words what appears to be the conclusion now being reached in engineering education—by engineering educators and professional engineers. He said "Education is the knowledge of how to use the whole of oneself. Many men use but one or two faculties out of the score with which they are endowed. A man is educated who knows how to make a tool of every faculty—how to open it, how to keep it sharp, and how to apply it to all practical purposes."

Ethics—Jones

(Continued from page 11)

At first thought, it seems unfair and unsportsmanlike that one should critize another's goods in order to sell his own. Suppose, though, the goods were inferior: Can the customer know all about the many products he buys?

Competitors, being in a position to familiarize themselves with each other's products, can guide the purchaser. But even the most unselfish mind would be somewhat prejudiced, leaving the customer no better off.

A number of trade associations have frowned upon the policy of disparaging another's goods except when the facts can be easily verified by the customer, such as weights and dimensions. Other organizations disapprove of all destructive criticism, believing in the long run it hurts the industry. Members of the Gas Products Association pledge to each other: "We shall refrain from and discourage the practice of disparaging a competitor's equipment, output, personnel, or his business, financial, or personal standing, and shall endeavor to prove to our competitors that we are as sincere and honest in all matters as we could wish them to be."

As was just suggested, suppose the technical ability of competing sales engineers becomes involved? One must be careful to maintain the dignity of the profession, remembering his Code of Ethics which forbids "advertising in self laudatory language" or price cutting, "after being informed of the charges named by another." He might bear in mind too the code of the medical profession which "condemns all criticism in the presence of laymen by one physician of the work of another physician, whether such criticism be founded or not."

Trying to decide where the work of a pure salesman leaves off and that of a sales engineer begins is often difficult. When competing products are of similar characteristics and are used extensively by the profession, an agent has no great need for his technical training, the order being landed by pure salesmanship. In other competitive situations, though one engineer suggests the solution, it is available to competitors, and again the order will go to the best salesman.

Where complete design work is required and where no direct competition can enter the field, a sales engineer's job approaches that of a consultant. He is responsible for the most efficient and economical solution of the problem. He cannot knowingly oversell the customer or allow a shoddy installation to be made without damaging the reputation of his profession. In this position of trust, lies his greatest test of character.

If he can be a real engineer, searching for the best solution regardless of personal gain; if he has the courage to step aside when he realizes his product doesn't fit in, he is achieving success.

More than that, he is an asset to his profession and to mankind.

Ethics—Balmer

(Continued from page 10)

of pure science. As an engineer he will give to society his best job of developing the absolute discovery into the practical improvement for the everyday man. Socially sanctioned, the motive is to do a good job well. To go beyond this is to risk placing the student on a pedestal of immortality where he will feel that society owes him a limitless debt for a limitless sacrifice.

(4) Bayles, James C., *Professional Ethics.*
(5) Mead, Daniel W., *Contracts, Specifications and Engineering Relations.*
(6) Enc. Brit., 14th Ed. Vol. XIV p. 506c.

Know today's problems. They will be tomorow's jobs. At the time of writing, for instance, the problems depending upon an engineering solution are:

1. Misuse of language by professions.
2. Public censure of engineers for interrupting economic conditions with technological advance.
3. Narrowness of social outlook.
4. Lack of knowledge by engineers of law and economics.
5. Lack of planning technique.

The student can certainly learn to use his language—it is another important instrument. Brilliance is useless if poor use of speech or writing rob it of opportunity.

As regards technological advance, the student can prepare to administer the social sciences. Facts are being uncovered, but there is a lack of their application. A new opportunity for tomorrow's engineer is waiting.

Social outlook, law, and economics are given lip service in pre-requisites to engineering courses. For the most part they are taken in a pure sense. If they are to be dovetailed into engineering practice, the student must accomplish it. In this respect the individual must be a student until he dies, for the solution is not sufficiently simple to be completed within the time before graduation.

The study of planning has begun. It will be continuous if it will be effective. Small projects may each seem worthy yet be in conflict when the whole is considered. Correlation is a factor of a good job.

So far nothing has been said about deliberate student dishonesties such as cribbing or copying. It is hoped that a student who chooses such a stiff and exacting course will be personally above such practices. If, however, some individuals need such elementary school standards, they must certainly acquire them if the following code is to be properly practiced.

VI. *A Code for Students.*

In compiling this code, two considerations were weighed. To be useful, ethics must be followed under the press of current problems. Ethics must be sufficiently general to last to infinity. It is believed that these five points will for the time being be a satisfactory pattern for students' conduct. As experience dictates, other points can be added.

To do a good job:

1. Think about ethics. Look to pure philosophy for a guide in interpreting or revising present codes.
2. Become acquainted with contemporary problems that will need solution in the future.
3. Be a social animal. Learn people and their needs. Do not blindly attempt to give what is not needed.
4. Aim to promote efficiency in the development of resources.
5. Form habits of doing right things. Habits will serve you in the serving of society. Service to society justifies your profession.

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Lawyer's Opinion

(Continued from page 6)

from training in the performance of routine mental, manual, or physical processes; or

(b) predominantly original and creative in character in a recognized field of artistic endeavor as opposed to work which can be produced by a person endowed with general manual or intellectual ability and training, and the result of which depends primarily on the invention, imagination, or talent of the employee, and B. compensated for his services on a salary or fee basis at a rate of not less than $200 per month (exclusive of board, lodging, or other facilities); provided that this subsection (B) shall not apply in the case of an employee who is the holder of a valid license or certificate permitting the practice of law or medicine or any of their branches and who is actually engaged in the practice thereof.

It would seem to me that this wording would exempt your employees. On the other hand, the decisions state that the exemptions shall be interpreted narrowly and a person claiming the exemption has to prove all of the different requirements entitling him to it.

There is a special reference to draftsmen but peculiarly this is under the provisions for executive and administrative exemptions. Exemption has been suggested for draftsmen and other technical professional employees. The observation is made that while some draftsmen do perform individual assignments and are responsible for their whole job, generally speaking when such employees should be exempted they need the qualifications set forth later for professional employees. It is peculiar that there is nothing further said about draftsmen under the professional class.

The rules and observations in regard to the professional class calls attention to the fact that originally there were only three professions, law, medicine and theology. The administrator has recognized however, that this is no longer true but he rules that he can only consider these professions which have a recognized status and which are based on the acquirement of so-called professional knowledge through prolonged study. It is recognized that accountants holding a C.P.A. certificate may now be considered in the professional class.

Observation is made that purely mechanical or routine work is not professional and that there must be the requirement for the consistent exercise of discretion and judgment.

It is stated that generally speaking the professions which meet this requirement are considered law, medicine, theology, accountancy, actuarial computation, engineering, architecture, various types of physical, chemical and biological sciences, teachings, etc. The typical symbol of the professional training and the best prima facie evidence of its posession is an academic degree. In this case the word academic is used in a broad sense.

I presume all of your men have some kind of a degree and many of them an engineering certificate. My conclusion is that they would be in the exempt class.

Whether exemption applies to everyone in the office is not clear. I would say it does not apply to a secretary, stenographer, 'phone girl or office boy. It probably applies to Miss Dodd as an administration employee.

In considering the term professional, the counsel for the administrator has cited a decision in New York where it was held that a Customs Broker, though he had a license from the Treasury Department and argued cases before the local Collector of Customs in behalf of patrons, he was not a professional man. The court called attention to the fact that the law specifically exempted the professions of law, medicine, dentistry, and architecture and any other profession in which capital is not a material income producing factor. The court stated that these professions could not be practiced by a corporation and that was some test of what is a profession. As I understand it, engineering in geenral is not practiced by a corporation although there is nothing in the law to prohibit it. Am I corerct? If the law did specifically prohibit it, your case would be much better.

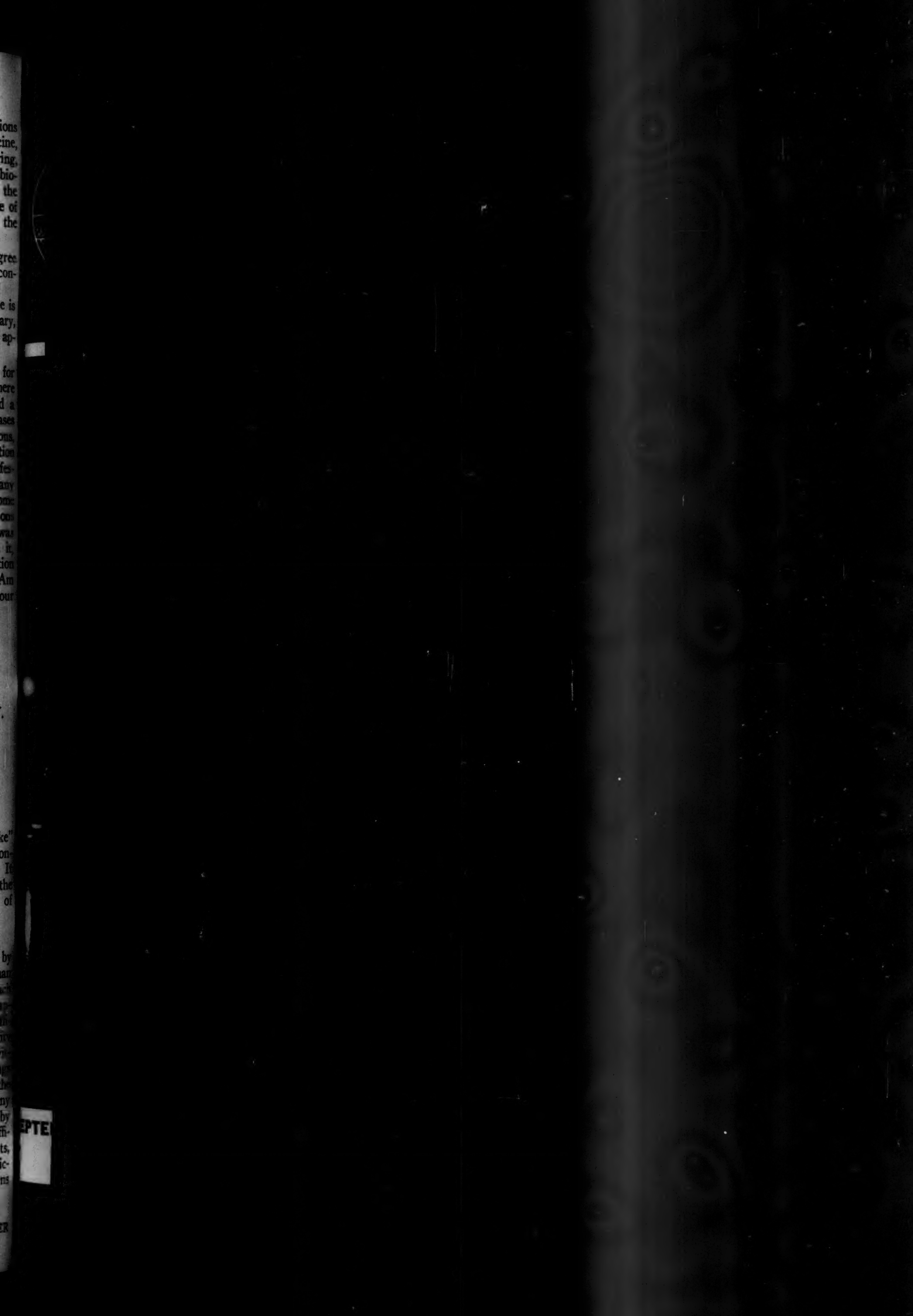
Sincerely,

R. P. McNULTY,
Corner, Bell, Russell & McNulty,
45 Willoughby St.,
Brooklyn, N. Y.

Code for Justice—Wyer

(Continued from page 5)

32. *Abolish "Sit-down Strikes"*—The "sit-down strike" is an illegal communistic technique. It destroys the constitutional rights of citizens and must be outlawed. It prepared the way for the defeat of France and, with the coming of German domination, the destruction of all of labor's rights.

II. How To Get Justice Without Violence

The interpretation of "interstate commerce" made by the Supreme Court of the United States in the Friedman Clothing Case, April 12, 1937, opens the legal door. Each United States district judge should be authorized to appoint one or more proctors of industrial relations as officers of the court. These proctors would have the authority to hold public hearings, take testimony, summon witnesses and records, and make findings. All such findings to be reviewable by the Federal Courts. Petitions for the hearing of any given controversy can be made by any worker who feels that he has not received justice, by representatives of Capital or Labor, or any public official in the community in which the controversy exists, and when filed, place the controversy under the jurisdiction of the court and ultimately outlaw all direct actions of violence.